

World on the Edge - Supporting Data for Chapter 10

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A full listing of data for the entire book is on-line at:

http://www.earth-policy.org/books/wote/wote_data

This is part of a supporting dataset for Lester R. Brown, **World on the Edge: How to Prevent Environmental and Economic Collapse** (New York: W.W. Norton & Company, 2011). For more information and a free download of the book, see Earth Policy Institute on-line at www.earth-policy.org.

Extent of No-Tillage Agriculture in Top Countries, 2007/08

Country	Area under No-till Hectares ¹
United States	26,500,000
Argentina	25,785,000
Brazil	25,502,000
Australia	17,000,000
Canada	13,481,000
Indo-Gangetic Plains ²	5,000,000
Paraguay	2,300,000
China	1,330,000
Kazakhstan	1,330,000
Bolivia	706,000
Uruguay	655,000
Spain	650,000
South Africa	368,000
Venezuela	300,000
France	200,000
Finland	200,000
Chile	180,000
New Zealand	162,000
Colombia	102,000
Ukraine	100,000
Total	116,921,000

Notes:

¹ One hectare = 2.47 acres.

² Includes four countries in South Asia: India, Pakistan, Bangladesh, and Nepal.

Source: Rolf Derpsch and Theodor Friedrich, "Sustainable Crop Production Intensification - The Adoption of Conservation Agriculture Worldwide," presentation for International Soil Tillage Research Conference, Santiago, Chile, November 2010.

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World Forest Cover, 1990-2010

Year	Africa	Asia	Europe	North and Central America	Oceania	South America	World
				Million Hectares*			
1990	749	576	989	708	199	946	4,168
2000	709	570	998	705	198	904	4,085
2005	691	584	1,001	705	197	882	4,061
2010	674	593	1,005	705	191	864	4,033

* Note: One hectare = 2.47 acres.

Source: U.N. Food and Agriculture Organization, *Forest Resources Assessment 2010: Global Tables* (Rome, 2010).

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Forest Area Losses in Top 10 Countries, 1990-2000 and 2000-2010

Country	Annual Change, 1990-2000		Country	Annual Change, 2000-2010	
	Million Hectares ¹	Percent ²		Million Hectares ¹	Percent ²
Brazil	-2.89	-0.5	Brazil	-2.64	-0.5
Indonesia	-1.91	-1.8	Australia	-0.56	-0.4
Sudan	-0.59	-0.8	Indonesia	-0.50	-0.5
Burma (Myanmar)	-0.44	-1.2	Nigeria	-0.41	-3.7
Nigeria	-0.40	-2.7	Tanzania	-0.40	-1.1
Tanzania	-0.40	-1.0	Zimbabwe	-0.33	-1.9
Mexico	-0.35	-0.5	D. R. Congo	-0.31	-0.2
Zimbabwe	-0.33	-1.6	Burma (Myanmar)	-0.31	-0.9
D. R. Congo	-0.31	-0.2	Bolivia	-0.29	-0.5
Argentina	-0.29	-0.9	Venezuela	-0.29	-0.6
Total	-7.93	-0.7	Total	6.04	-0.5

Notes:

¹ One hectare = 2.47 acres.

² Rate of gain or loss in percent of remaining forest area each year within the given period.

Source: U.N. Food and Agriculture Organization, *Global Forest Resources Assessment 2010* (Rome, 2010), p. 21.

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Forest Area Gains in Top 10 Countries, 1990-2000 and 2000-2010

Country	Annual Change, 1990-2000		Country	Annual Change, 2000-2010	
	Million Hectares ¹	Percent ²		Million Hectares ¹	Percent ²
China	1.99	1.2	China	2.99	1.6
United States	0.39	0.1	United States	0.38	0.1
Spain	0.32	2.1	India	0.30	0.5
Viet Nam	0.24	2.3	Viet Nam	0.21	1.6
India	0.15	0.2	Turkey	0.12	1.1
France	0.08	0.6	Spain	0.12	0.7
Italy	0.08	1.0	Sweden	0.08	0.3
Chile	0.06	0.4	Italy	0.08	0.9
Finland	0.06	0.3	Norway	0.08	0.8
Philippines	0.06	0.8	France	0.06	0.4
Total	3.40	0.6	Total	4.41	0.7

Notes:

¹ One hectare = 2.47 acres.

² Rate of gain or loss in percent of remaining forest area each year within the given period.

Source: U.N. Food and Agriculture Organization, *Global Forest Resources Assessment 2010* (Rome, 2010), p. 21.

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Planted Forest Area by Region, 2010

Region	Planted Forest Area ¹ Million Hectares ²	Share of Total Forest Area Percent
Africa	15	2.3
Asia	123	20.8
Europe	69	6.9
North and Central America	39	5.5
Oceania	4	2.1
South America	14	1.7
World	264	6.6

Notes:

¹ Forests composed of trees established through planting and/or deliberate seeding. "Planted forests" is a broader term than "forest plantations," and includes those designated for protective as well as for productive purposes.

² One hectare = 2.47 acres.

Source: U.N. Food and Agriculture Organization, *Global Forest Resources Assessment 2010* (Rome: 2010), p. 91.

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Paper Recycling Rates of Top Ten Paper Producing Countries and the World, 2005-2009

Country	Production Million Tons, 2005- 2009 Average	Paper Recovery Rate* Percent
United States	81	54
China	75	38
Japan	28	79
Germany	23	74
Canada	17	43
Finland	14	34
Sweden	12	69
South Korea	11	91
France	10	54
Italy	10	48
World	377	50

* Note: Paper recovery rate reflects 2005-2009 average of recovered paper and paperboard as a share of apparent consumption (production + imports - exports).

Source: Compiled by Earth Policy Institute from U.N. Food and Agriculture Organization (FAO), *ForesSTAT*, statistics database, at faostat.fao.org, updated 27 July 2010.

This is part of a supporting dataset for Lester R. Brown, **World on the Edge: How to Prevent Environmental and Economic Collapse** (New York: W.W. Norton & Company, 2011). For more information and a free download of the book, see Earth Policy Institute online at www.earth-policy.org.

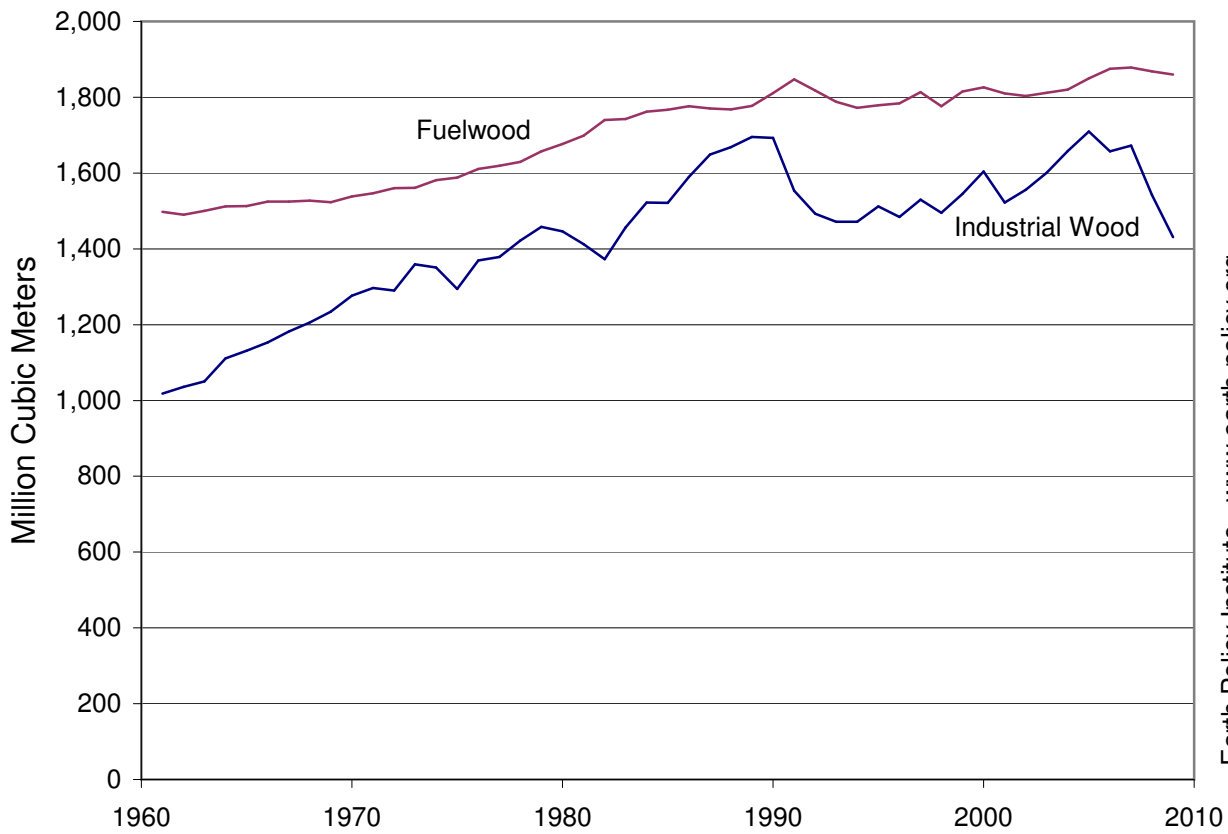
World Wood Production, 1961-2009

Year	Industrial Wood	Fuelwood	Total Wood	Fuelwood as a Share of
	Million Cubic Meters		Production	Total Wood Production
				Percent
1961	1,018	1,498	2,516	59.5
1962	1,036	1,490	2,527	59.0
1963	1,050	1,501	2,551	58.8
1964	1,111	1,512	2,623	57.6
1965	1,132	1,513	2,644	57.2
1966	1,153	1,524	2,678	56.9
1967	1,182	1,525	2,707	56.3
1968	1,206	1,527	2,733	55.9
1969	1,234	1,523	2,758	55.2
1970	1,276	1,538	2,815	54.7
1971	1,296	1,546	2,843	54.4
1972	1,290	1,560	2,850	54.7
1973	1,359	1,561	2,921	53.5
1974	1,351	1,581	2,932	53.9
1975	1,294	1,588	2,882	55.1
1976	1,370	1,611	2,981	54.1
1977	1,378	1,619	2,997	54.0
1978	1,422	1,629	3,051	53.4
1979	1,458	1,658	3,115	53.2
1980	1,446	1,677	3,123	53.7
1981	1,412	1,699	3,111	54.6
1982	1,372	1,740	3,113	55.9
1983	1,456	1,743	3,199	54.5
1984	1,522	1,762	3,284	53.7
1985	1,521	1,767	3,288	53.7
1986	1,590	1,776	3,366	52.8
1987	1,648	1,771	3,419	51.8
1988	1,668	1,768	3,436	51.5
1989	1,695	1,777	3,472	51.2
1990	1,693	1,811	3,503	51.7
1991	1,554	1,847	3,400	54.3
1992	1,493	1,817	3,310	54.9
1993	1,471	1,788	3,259	54.9
1994	1,472	1,772	3,243	54.6
1995	1,512	1,778	3,290	54.1
1996	1,484	1,784	3,268	54.6
1997	1,530	1,813	3,343	54.2
1998	1,495	1,776	3,272	54.3
1999	1,545	1,815	3,360	54.0
2000	1,604	1,826	3,430	53.2
2001	1,522	1,810	3,332	54.3
2002	1,556	1,803	3,360	53.7
2003	1,601	1,812	3,413	53.1
2004	1,658	1,820	3,478	52.3
2005	1,710	1,850	3,559	52.0
2006	1,658	1,875	3,533	53.1
2007	1,673	1,878	3,551	52.9
2008	1,542	1,868	3,410	54.8
2009	1,431	1,860	3,291	56.5

Source: Compiled by Earth Policy Institute from U.N. Food and Agriculture Organization, *ForesSTAT*, electronic database, at faostat.fao.org, updated July 2010.

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World Wood Production, 1961-2009



Source: FAO

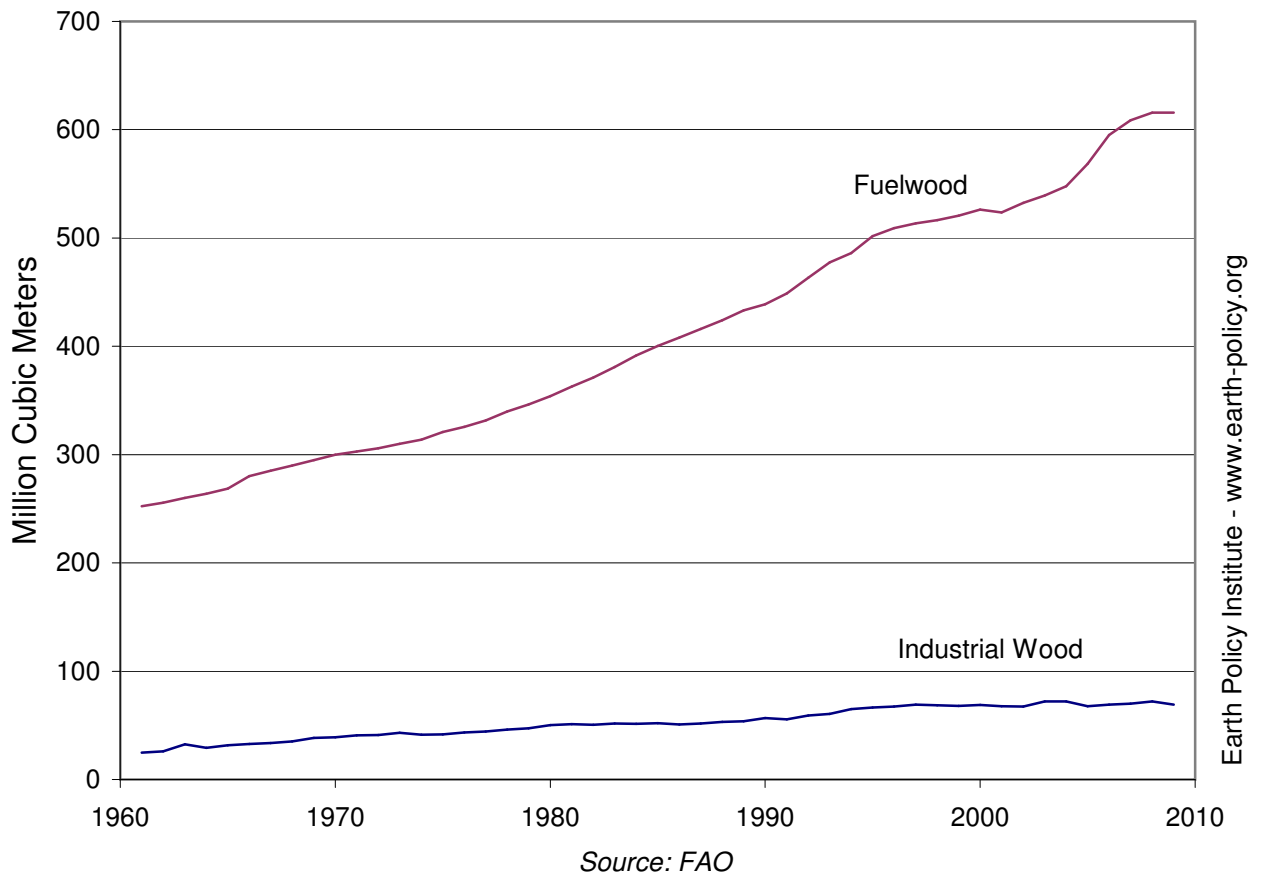
Wood Production in Africa, 1961-2009

Year	Industrial Wood	Fuelwood	Total Wood Production	Fuelwood as a Share of Total Wood Production
	Million Cubic Meters			Percent
1961	25	252	277	91.1
1962	26	256	282	90.8
1963	33	260	293	88.9
1964	29	264	293	90.1
1965	32	268	300	89.5
1966	33	280	313	89.5
1967	34	285	319	89.5
1968	35	290	325	89.2
1969	38	295	333	88.5
1970	39	300	339	88.5
1971	41	303	344	88.1
1972	41	306	347	88.2
1973	43	310	353	87.8
1974	41	314	355	88.3
1975	42	321	363	88.5
1976	43	326	369	88.2
1977	44	331	376	88.2
1978	46	340	386	88.0
1979	47	346	393	88.0
1980	50	354	404	87.6
1981	51	363	414	87.7
1982	50	371	422	88.0
1983	52	381	433	88.0
1984	51	391	443	88.4
1985	52	400	452	88.5
1986	51	408	459	88.9
1987	52	416	468	89.0
1988	53	424	477	88.9
1989	54	433	487	89.0
1990	57	439	495	88.5
1991	56	449	504	89.0
1992	59	463	522	88.7
1993	60	478	538	88.8
1994	65	486	551	88.2
1995	66	502	568	88.3
1996	67	509	576	88.3
1997	69	514	583	88.1
1998	69	516	585	88.3
1999	68	521	589	88.4
2000	69	526	595	88.4
2001	68	524	591	88.6
2002	67	532	600	88.8
2003	72	539	611	88.2
2004	72	548	620	88.4
2005	68	569	636	89.4
2006	69	595	664	89.6
2007	70	609	679	89.7
2008	72	616	688	89.5
2009	69	616	685	89.9

Source: Compiled by Earth Policy Institute from U.N. Food and Agriculture Organization, *ForesSTAT*, electronic database, at faostat.fao.org, updated July 2010.

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Wood Production in Africa, 1961-2009



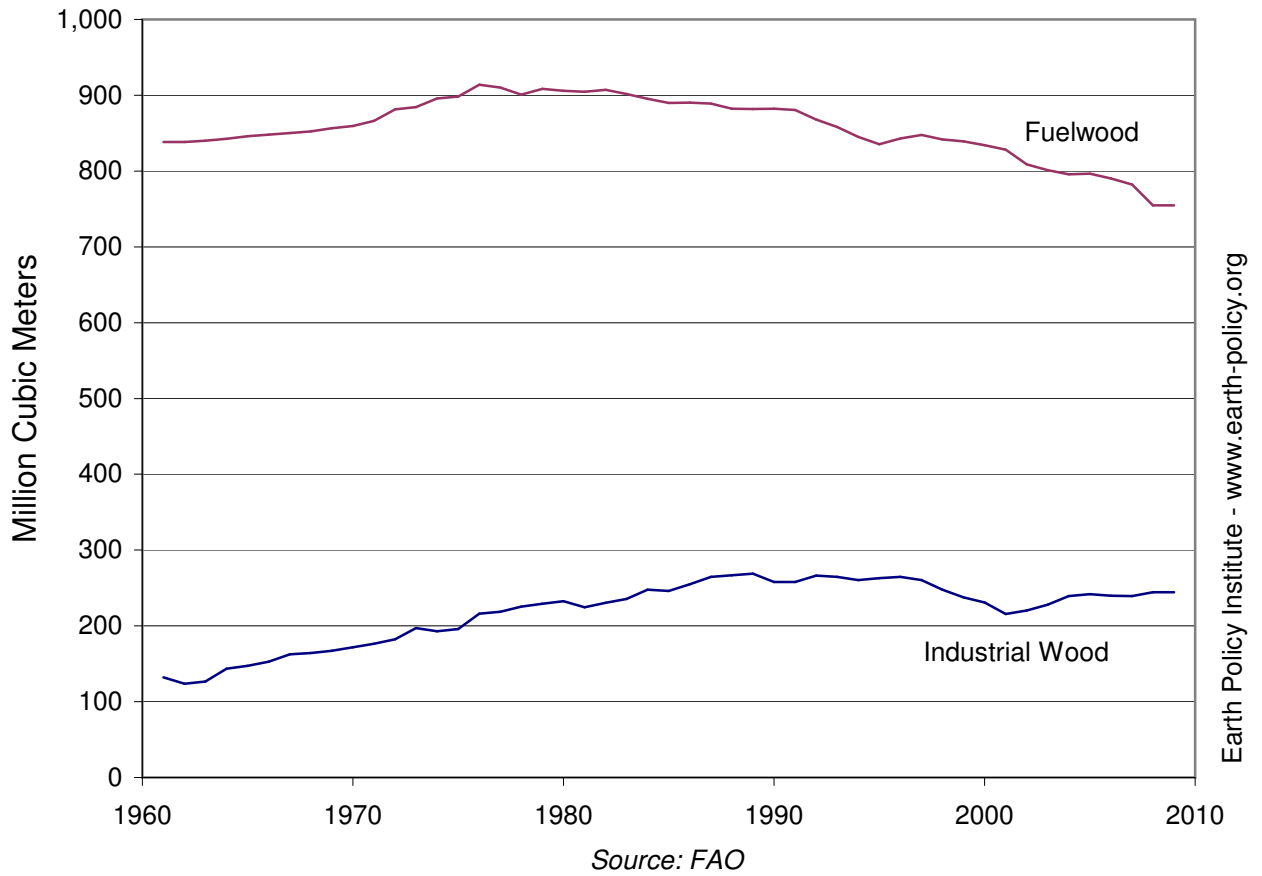
Wood Production in Asia, 1961-2009

Year	Industrial Wood	Fuelwood	Total Wood Production	Fuelwood as Share of Total Wood Production
	Million Cubic Meters			Percent
1961	132	838	970	86.4
1962	124	838	962	87.2
1963	127	840	966	86.9
1964	143	843	986	85.5
1965	147	846	993	85.2
1966	153	848	1,001	84.7
1967	162	850	1,013	84.0
1968	164	852	1,016	83.9
1969	167	857	1,024	83.7
1970	172	860	1,031	83.4
1971	177	866	1,043	83.1
1972	182	881	1,064	82.9
1973	197	884	1,081	81.8
1974	193	896	1,089	82.3
1975	196	898	1,094	82.1
1976	216	914	1,130	80.9
1977	219	910	1,129	80.6
1978	225	901	1,126	80.0
1979	229	909	1,138	79.9
1980	233	906	1,138	79.6
1981	225	904	1,129	80.1
1982	231	907	1,138	79.7
1983	235	902	1,137	79.3
1984	248	895	1,143	78.3
1985	246	890	1,136	78.3
1986	255	890	1,145	77.7
1987	265	889	1,154	77.1
1988	267	882	1,149	76.8
1989	269	882	1,151	76.6
1990	258	882	1,140	77.4
1991	258	881	1,139	77.3
1992	266	868	1,134	76.5
1993	265	858	1,123	76.4
1994	260	845	1,106	76.4
1995	263	835	1,098	76.0
1996	265	843	1,108	76.1
1997	261	848	1,108	76.5
1998	248	842	1,089	77.3
1999	238	839	1,077	77.9
2000	231	834	1,065	78.3
2001	216	828	1,044	79.3
2002	220	809	1,029	78.6
2003	228	801	1,029	77.9
2004	239	796	1,035	76.9
2005	242	796	1,038	76.7
2006	240	790	1,030	76.7
2007	240	782	1,022	76.5
2008	245	755	999	75.5
2009	244	755	999	75.5

Source: Compiled by Earth Policy Institute from U.N. Food and Agriculture Organization, *ForesSTAT*, electronic database, at faostat.fao.org, updated July 2010.

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Wood Production in Asia, 1961-2009



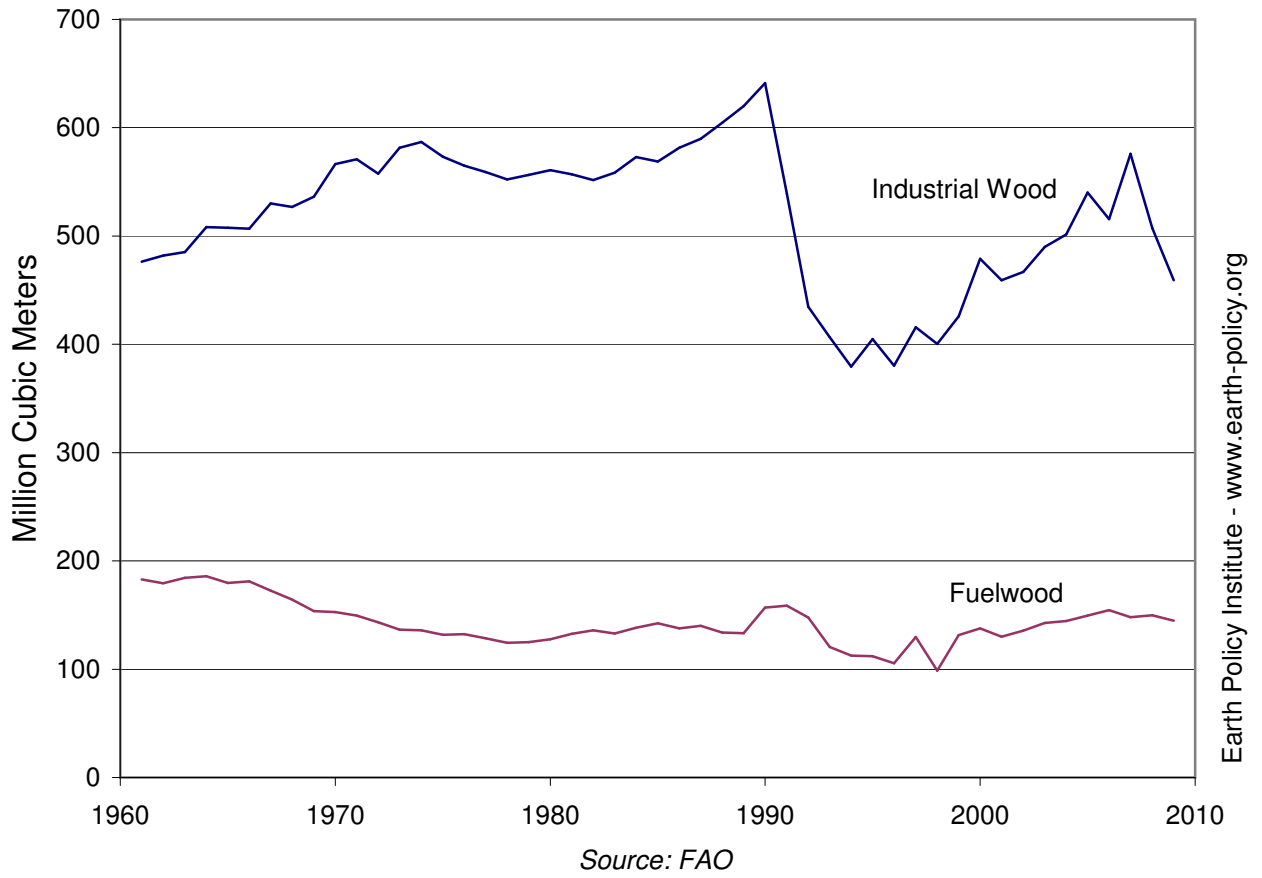
Wood Production in Europe, 1961-2009

Year	Industrial Wood	Fuelwood	Total Wood Production	Fuelwood as Share of Total Wood Production
	Million Cubic Meters			Percent
1961	476	183	659	27.7
1962	482	179	662	27.1
1963	485	184	670	27.5
1964	508	186	694	26.8
1965	508	180	687	26.1
1966	507	181	688	26.3
1967	530	173	703	24.6
1968	527	164	691	23.8
1969	536	154	690	22.3
1970	567	153	719	21.3
1971	571	149	720	20.7
1972	557	143	701	20.5
1973	582	137	718	19.0
1974	587	136	723	18.8
1975	573	132	705	18.7
1976	565	132	697	19.0
1977	559	129	687	18.7
1978	552	124	677	18.4
1979	556	125	681	18.3
1980	561	128	689	18.5
1981	557	133	690	19.2
1982	552	136	688	19.7
1983	558	133	691	19.2
1984	573	138	711	19.4
1985	569	142	711	20.0
1986	581	138	719	19.1
1987	590	140	730	19.2
1988	605	134	738	18.1
1989	620	133	753	17.7
1990	641	157	798	19.6
1991	539	159	698	22.7
1992	435	148	583	25.4
1993	407	121	527	22.9
1994	379	112	492	22.9
1995	405	112	517	21.7
1996	380	106	486	21.7
1997	416	130	545	23.8
1998	400	99	499	19.8
1999	426	132	557	23.6
2000	479	138	617	22.3
2001	459	130	589	22.1
2002	467	136	603	22.5
2003	490	143	632	22.6
2004	501	144	646	22.4
2005	540	150	690	21.7
2006	516	155	670	23.1
2007	576	148	724	20.5
2008	507	150	657	22.8
2009	459	145	604	24.0

Source: Compiled by Earth Policy Institute from U.N. Food and Agriculture Organization, *ForesSTAT*, electronic database, at faostat.fao.org, updated July 2010.

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Wood Production in Europe, 1961-2009



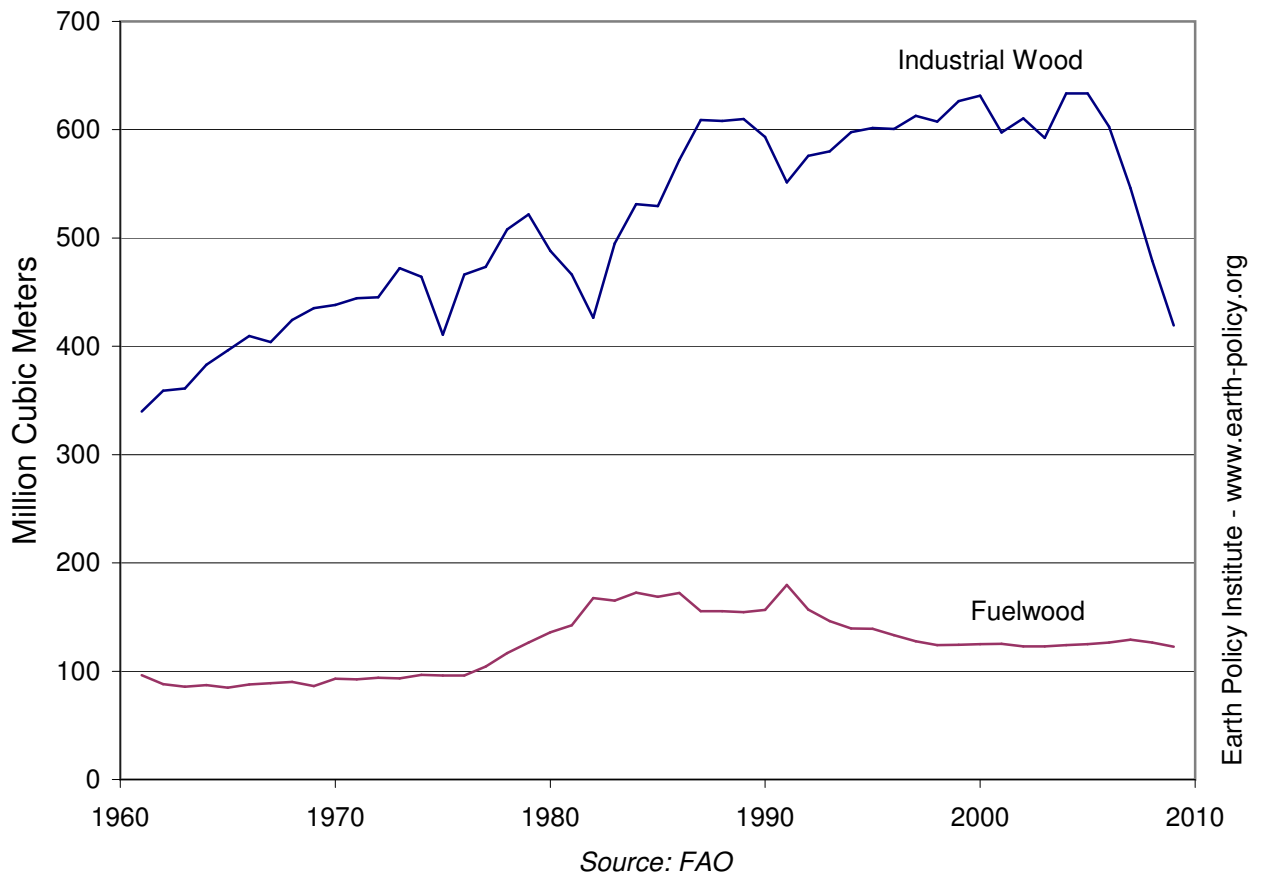
Wood Production in North and Central America, 1961-2009

Year	Industrial Wood	Fuelwood	Total Wood Production	Fuelwood as Share of Total Wood Production
	Million Cubic Meters			Percent
1961	340	96	436	22.1
1962	359	88	447	19.7
1963	361	86	447	19.2
1964	383	87	470	18.6
1965	396	85	481	17.6
1966	409	88	497	17.6
1967	404	89	493	18.0
1968	424	90	514	17.5
1969	435	86	522	16.6
1970	438	93	531	17.5
1971	444	93	537	17.2
1972	445	94	539	17.4
1973	472	93	566	16.5
1974	464	97	561	17.2
1975	411	96	507	19.0
1976	466	96	562	17.1
1977	473	104	578	18.0
1978	508	117	625	18.7
1979	522	127	648	19.5
1980	488	136	624	21.8
1981	466	142	609	23.4
1982	427	168	594	28.2
1983	495	165	660	25.0
1984	531	173	704	24.5
1985	530	169	698	24.1
1986	572	172	744	23.1
1987	609	156	765	20.3
1988	608	155	763	20.4
1989	610	155	765	20.2
1990	593	157	750	20.9
1991	551	180	731	24.6
1992	576	157	733	21.4
1993	580	146	726	20.1
1994	598	139	737	18.9
1995	602	139	741	18.8
1996	601	133	734	18.1
1997	613	128	741	17.2
1998	607	124	731	17.0
1999	626	124	751	16.6
2000	632	125	756	16.5
2001	597	125	723	17.3
2002	610	123	733	16.8
2003	592	123	715	17.2
2004	634	124	758	16.4
2005	633	125	759	16.5
2006	603	127	729	17.4
2007	546	129	675	19.1
2008	479	126	605	20.9
2009	419	123	542	22.6

Source: Compiled by Earth Policy Institute from U.N. Food and Agriculture Organization, *ForesSTAT*, electronic database, at faostat.fao.org, updated July 2010.

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Wood Production in North and Central America, 1961-2009



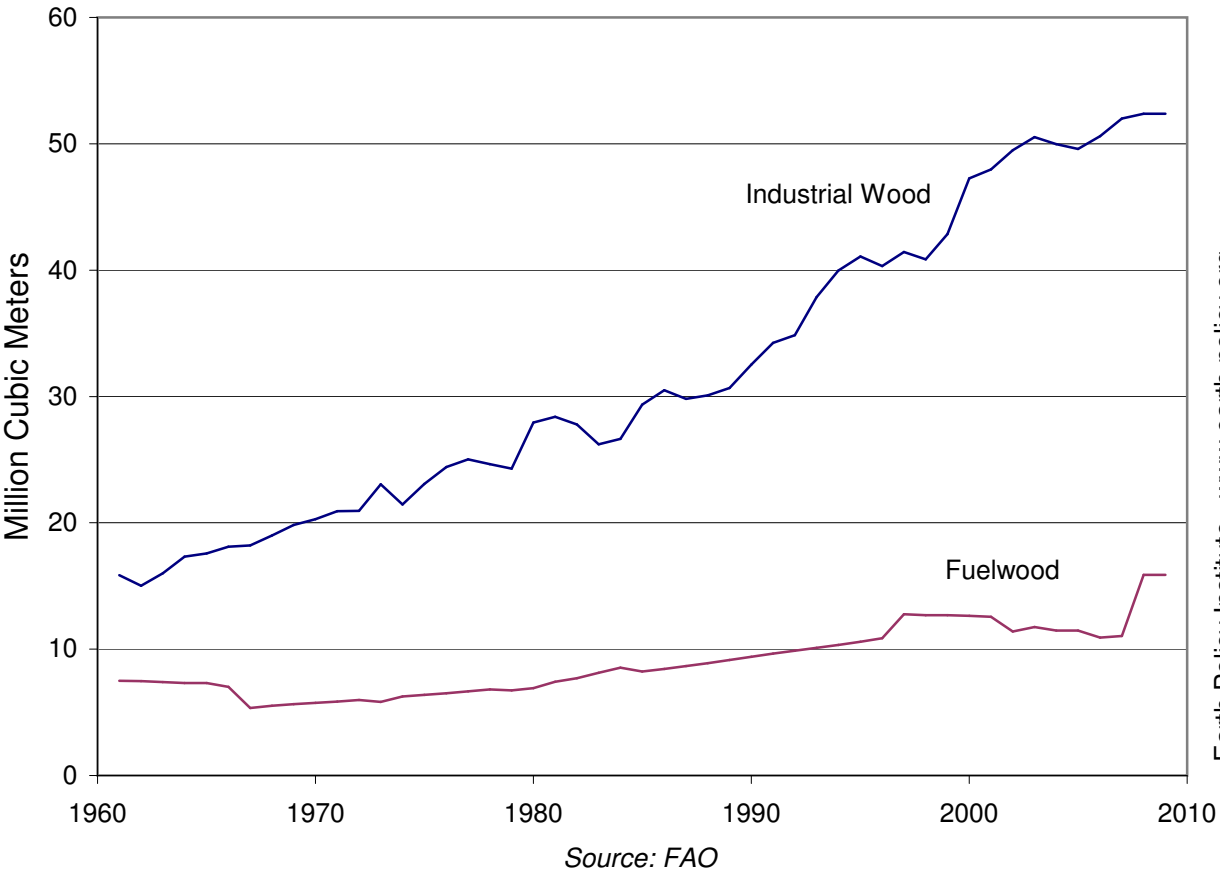
Wood Production in Oceania, 1961-2009

Year	Industrial Wood	Fuelwood	Total Wood Production	Fuelwood as Share of Total Wood Production
	Million Cubic Meters			Percent
1961	16	7	23	32.1
1962	15	7	22	33.2
1963	16	7	23	31.6
1964	17	7	25	29.7
1965	18	7	25	29.4
1966	18	7	25	27.9
1967	18	5	24	22.7
1968	19	6	25	22.5
1969	20	6	25	22.1
1970	20	6	26	22.1
1971	21	6	27	21.9
1972	21	6	27	22.2
1973	23	6	29	20.2
1974	21	6	28	22.6
1975	23	6	29	21.7
1976	24	7	31	21.0
1977	25	7	32	21.0
1978	25	7	31	21.6
1979	24	7	31	21.7
1980	28	7	35	19.8
1981	28	7	36	20.7
1982	28	8	35	21.7
1983	26	8	34	23.6
1984	27	9	35	24.3
1985	29	8	38	21.9
1986	30	8	39	21.7
1987	30	9	38	22.5
1988	30	9	39	22.8
1989	31	9	40	23.0
1990	33	9	42	22.4
1991	34	10	44	22.0
1992	35	10	45	22.1
1993	38	10	48	21.1
1994	40	10	50	20.6
1995	41	11	52	20.5
1996	40	11	51	21.2
1997	41	13	54	23.5
1998	41	13	54	23.7
1999	43	13	56	22.9
2000	47	13	60	21.1
2001	48	13	61	20.8
2002	49	11	61	18.7
2003	51	12	62	18.9
2004	50	11	61	18.7
2005	50	11	61	18.8
2006	51	11	62	17.7
2007	52	11	63	17.5
2008	52	16	68	23.3
2009	52	16	68	23.3

Source: Compiled by Earth Policy Institute from U.N. Food and Agriculture Organization, *ForesSTAT*, electronic database, at faostat.fao.org, updated July 2010.

This is part of a supporting dataset for Lester R. Brown, **World on the Edge: How to Prevent Environmental and Economic Collapse** (New York: W.W. Norton & Company, 2011). For more information and a free download of the book, see Earth Policy Institute on-line at www.earth-policy.org.

Wood Production in Oceania, 1961-2009



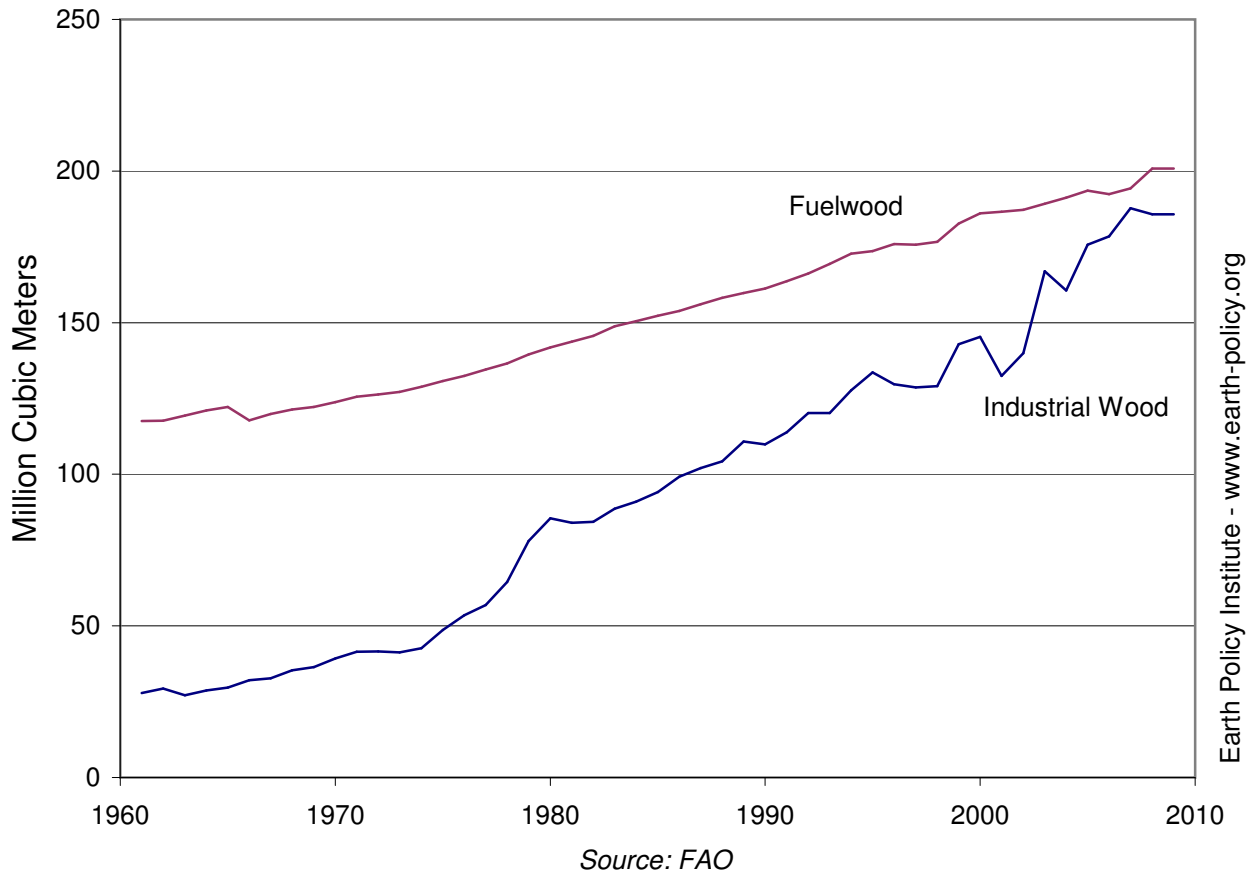
Wood Production in South America, 1961-2009

Year	Industrial Wood	Fuelwood	Total Wood Production	Fuelwood as Share of Total Wood Production
	Million Cubic Meters			Percent
1961	28	118	145	80.9
1962	29	118	147	80.1
1963	27	119	147	81.5
1964	29	121	150	80.9
1965	30	122	152	80.4
1966	32	118	150	78.6
1967	33	120	153	78.6
1968	35	121	157	77.4
1969	36	122	159	77.0
1970	39	124	163	75.9
1971	41	126	167	75.2
1972	42	126	168	75.2
1973	41	127	168	75.5
1974	43	129	172	75.1
1975	49	131	179	72.9
1976	53	132	186	71.2
1977	57	135	191	70.3
1978	64	137	201	67.9
1979	78	139	217	64.1
1980	86	142	227	62.4
1981	84	144	228	63.1
1982	84	146	230	63.3
1983	89	149	237	62.7
1984	91	151	242	62.3
1985	94	152	246	61.8
1986	99	154	253	60.8
1987	102	156	258	60.5
1988	104	158	262	60.3
1989	111	160	270	59.0
1990	110	161	271	59.5
1991	114	164	278	59.0
1992	120	166	286	58.0
1993	120	169	290	58.5
1994	128	173	300	57.5
1995	134	174	307	56.5
1996	130	176	306	57.6
1997	129	176	304	57.7
1998	129	177	306	57.8
1999	143	183	326	56.1
2000	145	186	331	56.1
2001	132	187	319	58.5
2002	140	187	327	57.2
2003	167	189	356	53.1
2004	161	191	352	54.4
2005	176	194	369	52.4
2006	178	192	371	51.9
2007	188	194	382	50.9
2008	186	201	387	52.0
2009	186	201	387	52.0

Source: Compiled by Earth Policy Institute from U.N. Food and Agriculture Organization, *ForesSTAT*, electronic database, at faostat.fao.org, updated July 2010.

This is part of a supporting dataset for Lester R. Brown, **World on the Edge: How to Prevent Environmental and Economic Collapse** (New York: W.W. Norton & Company, 2011). For more information and a free download of the book, see Earth Policy Institute on-line at www.earth-policy.org.

Wood Production in South America, 1961-2009



Net Carbon Emissions from Land Use Change, 1850-2005

Year	United States	Canada	S. and C. America	Europe	N. Africa and Mid. East	Tropical Africa	Former USSR	China	S. and S. E. Asia	Developing Pacific	World
Million Tons of Carbon											
1850	164.1	5.5	23.5	55.0	4.0	-1.3	58.6	101.8	87.3	2.0	500.6
1851	165.7	5.4	23.2	55.0	4.0	-1.1	58.6	93.1	86.9	2.0	492.7
1852	230.7	5.3	22.9	55.0	4.0	-1.0	58.9	83.8	86.9	2.0	548.5
1853	238.5	5.3	22.6	55.0	4.0	-1.1	59.2	74.2	87.0	2.0	546.8
1854	246.2	5.3	22.4	54.9	4.0	-1.0	59.6	64.3	87.1	2.0	544.8
1855	253.6	5.3	22.2	54.9	4.0	-1.1	60.0	54.2	87.1	2.0	542.1
1856	260.5	5.2	22.0	54.9	4.0	-1.1	60.3	52.6	87.2	2.0	547.7
1857	267.2	5.2	21.8	54.8	4.0	-1.1	60.7	51.3	87.3	2.0	553.3
1858	273.6	5.2	21.7	54.8	4.0	-1.4	61.1	50.2	87.4	2.0	558.6
1859	279.7	5.2	21.5	54.8	4.0	-1.6	61.5	49.4	87.5	2.0	564.0
1860	285.7	5.2	21.1	54.8	4.0	-1.8	61.9	48.7	87.6	2.0	569.0
1861	290.7	5.1	21.9	54.8	9.0	-2.1	62.2	48.1	87.7	2.1	579.6
1862	237.7	6.8	22.1	54.9	10.0	-1.9	53.7	47.8	87.8	2.2	520.9
1863	236.8	7.3	22.2	55.0	10.8	-1.7	53.7	46.6	87.9	2.3	521.1
1864	236.0	7.8	22.3	55.1	11.3	-1.2	53.8	46.2	88.0	2.4	521.6
1865	235.2	8.4	22.3	55.2	11.6	-0.7	53.9	45.8	88.1	2.6	522.4
1866	234.8	8.9	21.9	55.3	12.0	-0.5	53.7	45.4	88.2	2.7	522.5
1867	232.5	9.4	21.5	55.5	12.3	-0.2	53.6	45.2	88.2	2.8	520.8
1868	230.6	9.9	21.1	55.6	12.6	-0.2	53.5	44.9	88.3	3.0	519.2
1869	228.6	10.4	20.7	55.8	12.9	-0.4	53.4	44.7	88.4	3.1	517.5
1870	226.8	10.8	20.7	56.0	13.2	-0.6	53.3	44.5	88.4	3.2	516.3
1871	224.2	11.3	20.6	50.5	13.4	-0.8	53.2	44.3	110.0	9.9	536.7
1872	303.9	11.8	20.5	49.6	13.6	-1.0	53.5	44.2	115.2	11.9	623.2
1873	309.3	12.3	20.4	48.8	13.9	-0.8	53.7	44.1	118.9	13.7	634.1
1874	314.4	12.7	20.3	47.9	14.1	-0.4	54.0	42.0	121.7	14.3	641.1
1875	319.3	13.2	20.3	47.2	14.3	-0.3	54.3	41.4	123.9	14.9	648.4
1876	324.1	13.6	20.4	46.5	14.5	-0.1	54.9	40.9	125.2	15.4	655.5
1877	330.1	13.3	20.9	45.9	14.6	0.0	55.0	40.4	126.4	15.8	662.4
1878	335.8	13.2	21.3	45.4	14.8	0.0	55.1	40.3	127.4	16.1	669.5
1879	341.3	13.1	21.7	44.9	14.9	0.0	55.2	40.4	128.3	16.4	676.4
1880	346.7	13.1	22.1	44.4	15.1	-0.2	55.3	40.6	129.1	16.7	682.9

1881	350.7	13.0	54.1	43.9	15.2	-0.3	55.4	40.3	129.5	17.0	718.9
1882	295.6	12.9	63.0	43.5	15.4	-0.5	55.5	40.1	129.9	17.3	672.7
1883	294.0	12.8	70.2	43.1	15.5	-0.7	55.6	39.9	130.2	17.6	678.3
1884	292.7	12.7	76.1	42.7	15.6	-0.4	55.8	39.7	130.5	17.9	683.4
1885	291.6	12.6	81.2	42.4	15.8	-0.2	55.9	39.6	130.7	18.2	687.7
1886	290.3	12.5	84.1	42.6	15.9	0.0	56.0	39.4	131.0	18.5	690.4
1887	286.8	12.4	86.2	42.7	16.0	0.1	56.2	39.2	131.2	18.8	689.8
1888	283.3	12.3	87.9	42.9	16.2	0.0	56.3	39.1	131.4	19.1	688.6
1889	279.9	12.2	89.4	43.1	16.3	-0.2	56.4	39.0	131.6	19.4	687.2
1890	276.6	12.1	90.6	43.3	16.4	-0.2	56.6	39.0	131.8	19.6	685.9
1891	272.6	12.0	73.4	43.5	16.5	-0.4	56.7	39.0	148.3	19.8	681.5
1892	285.2	11.9	70.0	43.7	16.7	-0.7	56.8	39.0	152.3	20.1	695.0
1893	285.6	11.8	67.3	43.9	16.8	-1.1	57.0	39.1	155.2	20.3	695.8
1894	287.1	11.7	65.2	44.1	16.9	-1.4	57.1	54.6	157.4	20.5	713.3
1895	288.7	11.7	63.6	44.3	17.0	-1.3	57.2	56.4	159.2	20.7	717.5
1896	288.3	11.6	62.6	44.5	17.1	-1.3	57.3	58.1	160.2	20.9	719.4
1897	289.2	11.5	61.7	44.7	17.2	-1.0	57.5	59.8	161.1	21.1	723.0
1898	288.2	11.4	61.1	44.9	17.3	-0.6	57.6	61.4	161.9	21.3	724.5
1899	287.2	11.3	60.6	45.0	17.4	-0.6	57.7	62.9	162.6	21.6	725.8
1900	286.3	11.3	60.3	45.2	17.6	-0.7	57.8	64.4	163.1	21.7	726.9
1901	285.9	11.2	121.8	45.4	20.1	-0.8	57.9	65.8	163.5	22.0	792.8
1902	240.4	24.0	139.4	45.7	20.6	-0.3	58.0	82.7	163.8	22.3	796.8
1903	231.8	26.8	153.8	46.0	21.0	1.0	58.2	100.6	164.1	22.7	825.9
1904	222.2	29.5	165.8	46.3	21.3	2.7	58.3	119.0	164.4	23.0	852.4
1905	213.1	32.1	176.1	46.6	21.5	4.8	58.5	137.9	164.6	23.3	878.5
1906	205.9	34.6	180.8	46.9	21.7	7.4	58.6	157.1	172.8	23.6	909.5
1907	198.5	37.1	184.7	47.3	21.9	10.2	58.6	161.6	174.9	23.9	918.6
1908	193.3	39.4	187.9	47.6	22.1	12.9	58.6	165.5	176.4	24.3	927.9
1909	188.2	41.8	190.5	48.0	22.2	15.5	58.6	168.4	177.5	24.6	935.3
1910	183.0	44.1	192.6	48.3	22.3	17.9	58.5	170.9	178.4	24.9	941.0
1911	178.8	46.3	130.5	48.7	22.5	20.2	58.5	173.2	179.0	25.1	882.9
1912	153.5	48.6	112.6	49.1	22.6	22.7	58.5	173.6	179.6	25.4	846.2
1913	147.6	50.8	98.0	49.5	22.7	25.0	63.7	173.8	159.2	25.7	815.9
1914	142.9	52.9	85.5	49.8	22.8	27.2	65.2	177.8	154.7	25.9	804.8
1915	138.3	55.1	74.6	50.2	22.9	29.4	66.6	178.4	151.4	26.2	793.0
1916	133.5	57.2	70.5	50.7	22.9	31.5	67.9	178.8	155.8	26.4	795.1
1917	130.0	57.8	67.2	51.1	23.0	34.1	69.2	183.7	155.5	26.6	798.2

1918	126.1	58.4	64.5	51.5	23.0	36.4	70.5	188.8	155.4	26.8	801.4
1919	124.4	58.9	62.2	51.9	23.0	38.7	71.8	193.9	155.2	27.1	807.1
1920	118.6	59.5	60.0	52.3	23.0	41.1	73.1	199.0	154.9	27.3	808.8
1921	112.5	60.0	104.8	52.8	23.1	43.0	74.4	204.1	154.6	27.6	856.7
1922	85.5	60.6	117.3	53.2	23.1	44.9	75.7	206.7	154.3	27.8	849.1
1923	76.4	61.1	127.4	53.6	23.1	46.7	77.1	209.2	154.4	28.0	857.0
1924	67.2	61.6	135.9	54.0	23.1	48.2	78.4	211.6	154.5	28.2	862.7
1925	56.5	62.1	143.3	54.4	23.1	49.6	79.8	213.8	154.6	28.3	865.6
1926	49.8	62.6	145.4	54.1	31.7	51.0	81.2	216.0	150.1	28.6	870.5
1927	93.2	52.6	147.0	53.6	33.6	52.3	82.5	216.9	149.2	28.8	909.7
1928	92.9	51.0	148.1	53.0	35.4	54.1	83.1	217.8	148.6	29.1	913.0
1929	117.0	49.4	149.0	52.4	35.8	55.8	83.7	219.5	148.2	29.3	940.0
1930	191.7	47.8	150.1	51.6	36.1	57.4	84.3	221.6	148.0	29.5	1,018.1
1931	187.6	46.3	161.8	50.7	36.7	59.1	84.9	223.7	148.0	29.8	1,028.7
1932	85.0	44.9	165.0	49.7	37.3	60.8	85.5	224.6	148.0	30.0	930.8
1933	77.4	43.5	167.5	48.6	37.8	62.8	86.1	225.4	148.1	30.3	927.6
1934	70.2	42.1	169.5	47.4	38.3	64.7	84.6	220.0	148.2	30.5	915.3
1935	67.8	40.8	171.1	46.1	38.8	67.5	82.8	219.8	148.3	30.8	913.7
1936	59.4	39.5	172.8	44.8	39.2	69.2	80.9	219.8	165.5	31.0	922.0
1937	32.8	38.2	174.6	43.4	39.6	71.1	78.8	219.7	169.7	31.3	899.3
1938	33.4	36.9	176.3	42.0	40.0	73.0	76.7	219.8	172.8	31.5	902.4
1939	29.5	35.6	177.8	40.6	40.3	75.3	74.5	219.8	175.2	31.7	900.5
1940	16.5	34.4	179.2	39.1	40.7	77.6	71.1	219.8	177.1	32.0	887.5
1941	15.0	33.1	177.8	37.7	41.0	79.5	54.4	219.8	179.6	32.2	870.2
1942	27.6	33.1	177.3	36.2	41.3	81.7	47.5	231.9	182.2	32.4	891.3
1943	13.2	33.1	176.9	34.8	41.7	84.0	40.8	244.6	184.7	32.6	886.4
1944	9.0	33.1	176.6	33.3	41.9	86.3	34.4	257.7	187.2	32.8	892.3
1945	0.1	33.1	176.4	31.9	42.1	88.6	28.0	271.2	189.6	33.0	894.1
1946	-4.8	33.1	179.4	30.4	42.3	91.2	24.0	284.9	263.1	33.2	976.9
1947	5.9	32.9	182.5	29.0	42.6	93.5	20.4	286.9	281.7	33.4	1,008.9
1948	-5.2	32.7	185.8	27.5	42.8	97.3	17.2	288.7	295.4	33.6	1,015.8
1949	-10.6	32.5	189.2	26.1	43.0	101.2	14.3	290.2	305.1	33.8	1,024.9
1950	-11.4	32.4	192.8	24.7	43.2	105.2	13.1	290.1	313.4	34.0	1,037.3
1951	3.2	32.2	251.7	23.5	34.4	109.3	126.9	289.8	319.8	67.5	1,258.3
1952	-42.0	32.9	270.4	22.5	32.6	105.9	149.6	308.1	327.8	76.9	1,284.7
1953	-66.3	32.6	285.8	21.7	30.8	108.9	171.5	327.0	284.3	84.5	1,280.9
1954	-64.4	32.4	298.7	21.0	28.6	112.0	192.7	346.5	281.0	86.6	1,335.0

1955	-73.6	32.1	309.8	20.4	26.4	115.3	213.7	366.3	281.0	87.9	1,379.5
1956	-65.5	31.9	316.5	20.0	25.7	118.6	236.1	386.5	280.4	88.8	1,438.9
1957	-68.0	31.6	322.0	19.7	25.0	122.0	258.2	388.6	280.7	89.3	1,469.1
1958	-33.0	31.4	326.7	19.5	24.4	124.8	280.0	381.7	275.9	89.5	1,520.8
1959	-71.8	31.1	330.7	19.4	23.8	127.6	208.3	362.1	276.8	89.6	1,397.8
1960	-74.9	30.9	334.3	19.4	23.2	130.5	210.9	343.1	278.9	89.6	1,385.8
1961	-88.5	30.6	449.6	16.7	22.6	132.7	205.2	323.1	282.4	89.5	1,463.9
1962	-86.2	30.7	484.4	16.3	22.1	133.6	201.9	296.2	271.8	89.3	1,460.0
1963	-92.3	30.8	512.0	16.0	21.5	138.9	198.8	285.6	274.4	89.1	1,474.9
1964	-95.4	30.9	534.4	15.8	21.0	140.7	196.2	285.0	269.7	88.8	1,487.1
1965	-99.9	31.1	553.7	15.6	20.5	143.4	192.9	284.3	274.8	88.6	1,505.0
1966	-67.9	31.2	563.7	15.5	21.6	142.5	181.2	283.1	280.1	88.3	1,539.3
1967	-63.8	31.2	572.4	15.4	21.8	143.6	169.5	282.2	285.6	87.9	1,545.8
1968	-62.8	31.2	580.3	15.3	22.0	139.4	157.9	281.7	225.0	87.6	1,477.7
1969	-51.6	31.1	587.0	15.3	21.7	146.5	147.8	281.2	216.9	87.0	1,483.1
1970	-53.0	31.1	593.1	13.6	21.5	139.8	114.5	280.8	212.0	86.5	1,439.7
1971	-89.3	31.1	536.8	11.2	21.5	143.1	100.1	280.7	206.4	50.2	1,291.7
1972	-80.9	30.1	524.9	8.6	21.6	146.8	85.4	282.8	205.7	39.1	1,264.2
1973	-92.9	30.2	515.6	6.0	21.6	150.8	71.3	284.7	231.8	29.7	1,248.7
1974	-92.1	30.2	508.3	3.2	21.7	154.7	64.9	287.2	250.4	26.1	1,254.5
1975	-81.5	30.3	502.6	0.2	21.7	144.5	58.8	291.3	254.0	23.2	1,245.1
1976	-64.8	30.4	503.0	-2.6	21.8	159.0	55.9	303.4	284.9	20.8	1,311.9
1977	-60.2	30.5	504.2	-5.6	21.8	142.4	50.4	306.4	306.6	18.8	1,315.1
1978	-54.4	30.6	505.3	-8.8	21.8	149.0	44.8	285.3	321.2	16.9	1,311.9
1979	-51.7	30.7	506.2	-12.1	21.8	150.3	39.5	248.1	335.7	15.3	1,283.8
1980	-53.9	30.9	507.8	-14.1	21.9	144.6	35.4	209.5	344.1	13.7	1,239.9
1981	-50.2	31.0	510.0	-15.3	17.0	166.7	33.4	168.8	386.5	15.6	1,263.4
1982	-38.0	27.8	729.4	-16.4	16.6	181.9	30.7	122.9	393.3	14.9	1,463.0
1983	-38.8	27.0	787.5	-17.2	16.4	195.3	28.8	101.5	398.2	14.1	1,512.9
1984	-42.5	26.2	833.6	-17.9	18.0	205.5	27.2	93.8	403.4	12.7	1,560.1
1985	-39.4	25.5	873.0	-18.3	19.8	197.1	25.8	82.7	405.9	11.3	1,583.2
1986	-34.3	24.7	902.5	-18.6	20.4	193.4	23.4	76.8	403.1	9.8	1,601.1
1987	-31.1	24.2	917.0	-18.7	21.0	193.3	22.6	71.0	403.6	8.2	1,611.1
1988	-21.6	23.7	926.4	-18.7	21.7	202.8	21.8	64.8	410.7	6.6	1,638.5
1989	-21.8	23.2	932.6	-18.4	22.5	197.1	21.2	66.6	418.6	5.3	1,647.0
1990	-31.9	22.8	936.8	-18.1	23.2	201.4	20.1	61.1	424.5	3.9	1,643.7
1991	-31.9	22.3	938.6	-18.1	23.2	195.5	20.1	50.9	508.0	3.9	1,712.5

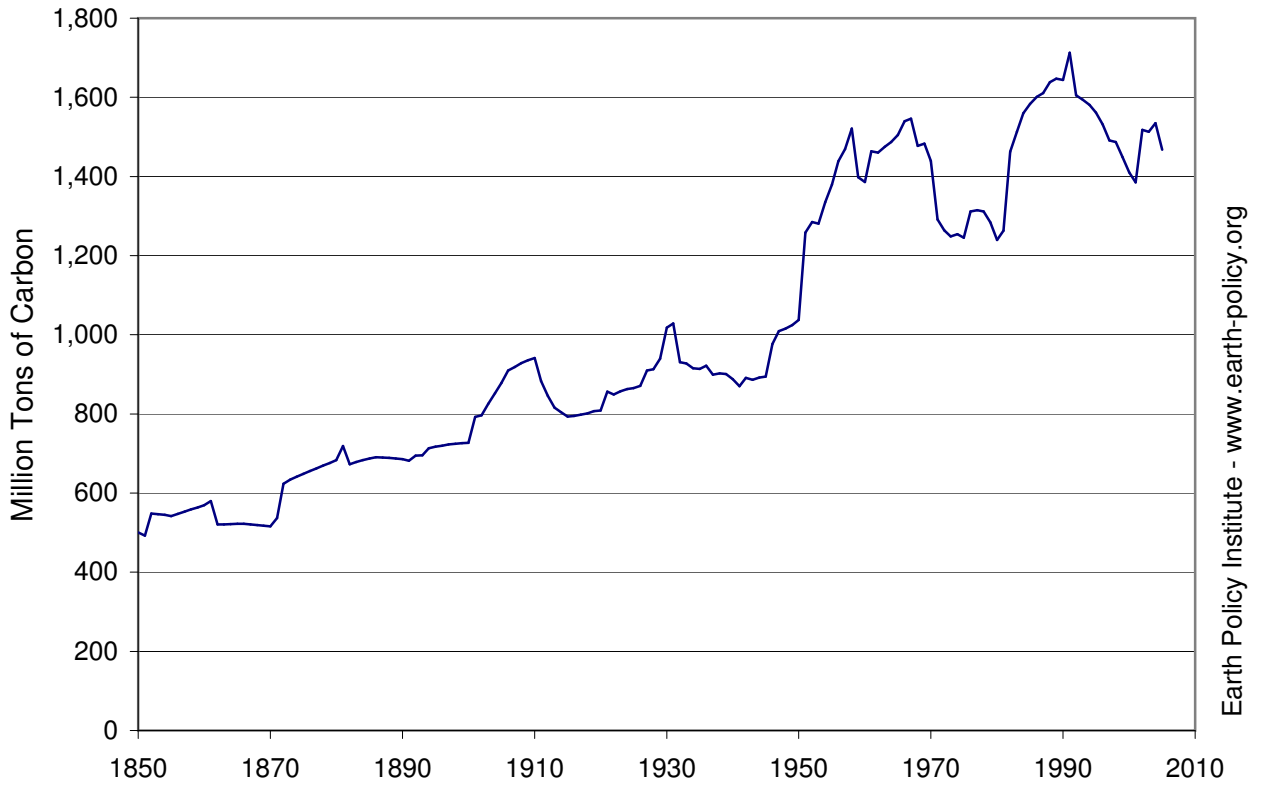
1992	-31.9	21.6	803.7	-18.1	23.2	214.3	20.1	39.8	528.4	3.9	1,605.0
1993	-31.9	20.9	767.5	-18.1	23.2	224.9	20.1	39.5	543.7	3.9	1,593.8
1994	-31.9	20.1	737.3	-18.1	23.2	243.7	20.1	43.0	539.2	3.9	1,580.5
1995	-31.9	19.4	713.4	-18.1	23.2	262.8	20.1	31.1	537.7	3.9	1,561.6
1996	-31.9	18.7	692.1	-18.1	23.2	260.9	20.1	27.3	535.0	3.9	1,531.3
1997	-31.9	18.4	678.5	-18.1	23.2	247.5	20.1	21.1	528.5	3.9	1,491.3
1998	-31.9	18.2	667.1	-18.1	23.2	269.4	20.1	12.1	523.2	3.9	1,487.2
1999	-31.9	17.9	656.4	-18.1	23.2	263.9	20.1	5.0	508.7	3.9	1,449.2
2000	-31.9	17.6	649.6	-18.1	23.2	260.9	20.1	-12.9	497.5	3.9	1,409.9
2001	-31.9	17.6	643.2	-18.1	23.2	261.7	20.1	-12.9	478.5	3.9	1,385.4
2002	-31.9	17.6	625.5	-18.1	23.2	258.5	20.1	-12.9	631.7	3.9	1,517.7
2003	-31.9	17.6	616.5	-18.1	23.2	225.5	20.1	-12.9	669.3	3.9	1,513.2
2004	-31.9	17.6	609.4	-18.1	23.2	225.8	20.1	-12.9	697.8	3.9	1,534.9
2005	-31.9	17.6	606.4	-18.1	23.2	239.2	20.1	-12.9	619.7	3.9	1,467.3

Note: Figures after 1990 for regions outside of the tropics are estimations. Negative values indicate net carbon uptake.

Source: R. A. Houghton, "Carbon Flux to the Atmosphere from Land-Use Changes: 1850-2005," in Carbon Dioxide Information Analysis Center, *Trends: A Compendium of Data on Global Change* (Oak Ridge, TN: Oak Ridge National Laboratory, 2008 and 2010), at cdiac.ornl.gov/trends/trends.htm.

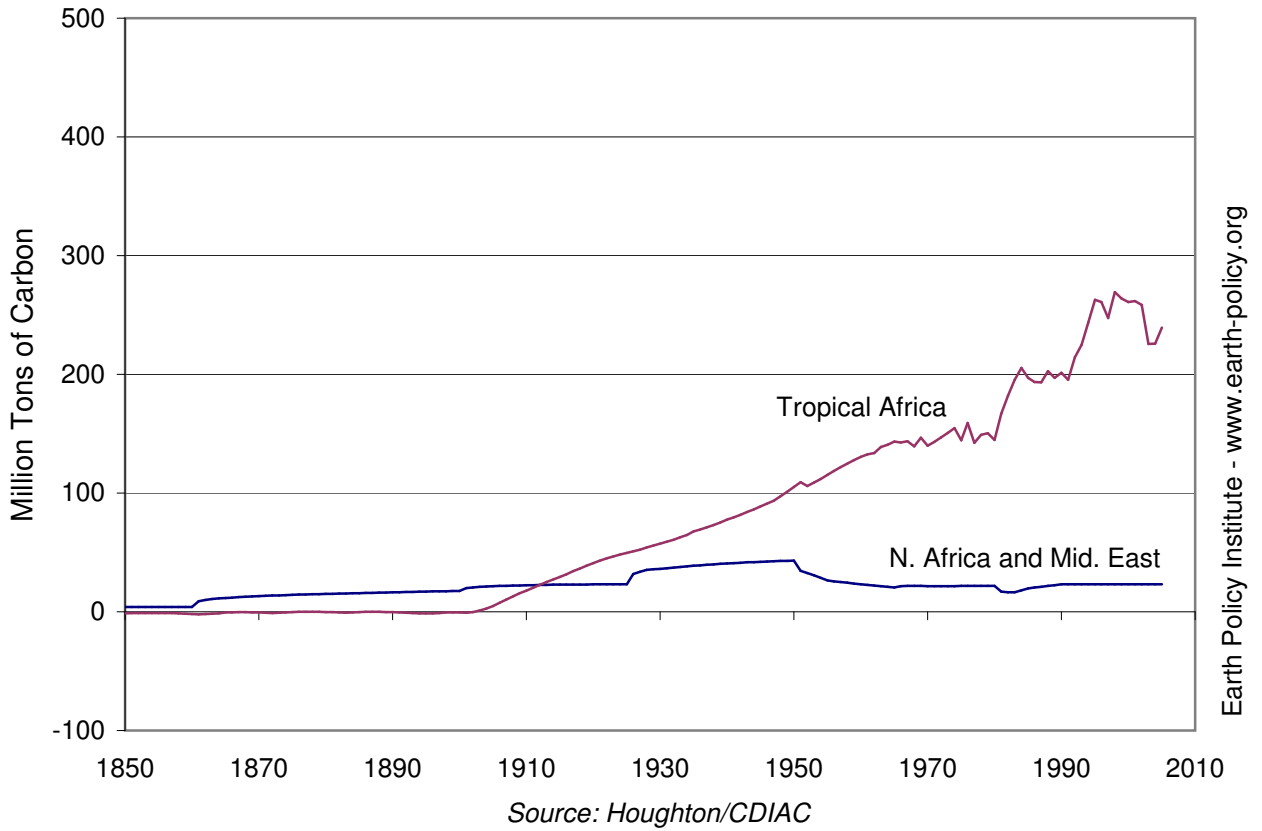
This is part of a supporting dataset for Lester R. Brown, **World on the Edge: How to Prevent Environmental and Economic Collapse** (New York: W.W. Norton & Company, 2011). For more information and a free download of the book, see Earth Policy Institute on-line at www.earth-policy.org.

Net Carbon Emissions from Land Use Change Worldwide, 1850-2005

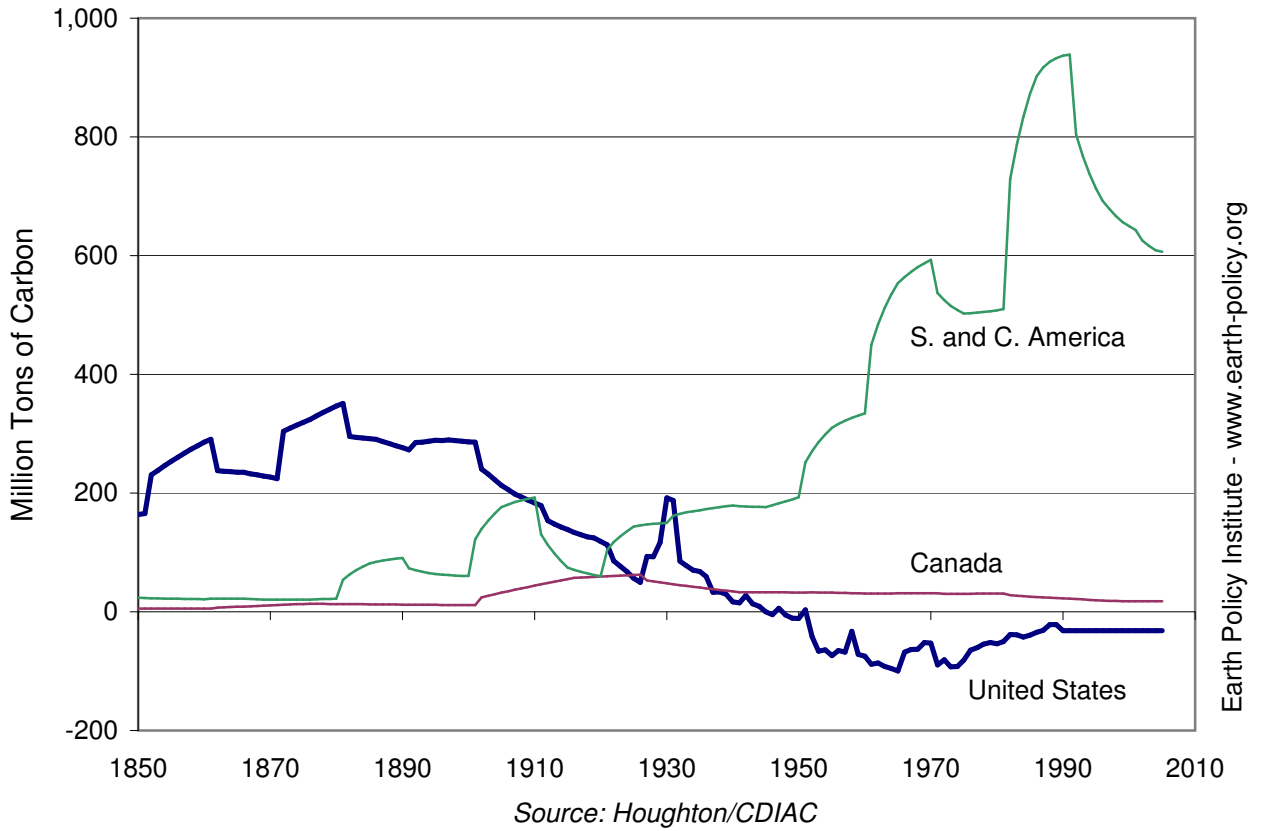


Source: Houghton/CDIAC

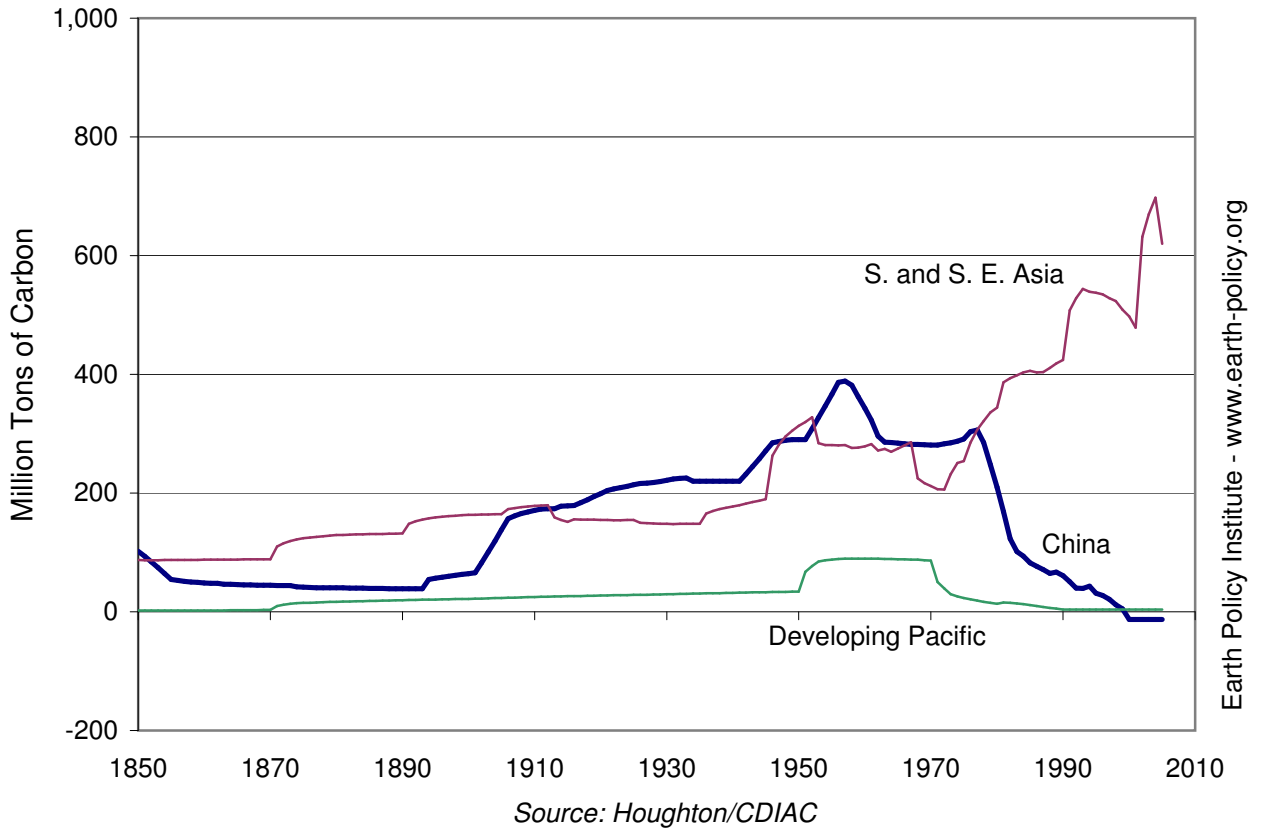
Net Carbon Emissions from Land Use Change in Africa and the Middle East, 1850-2005



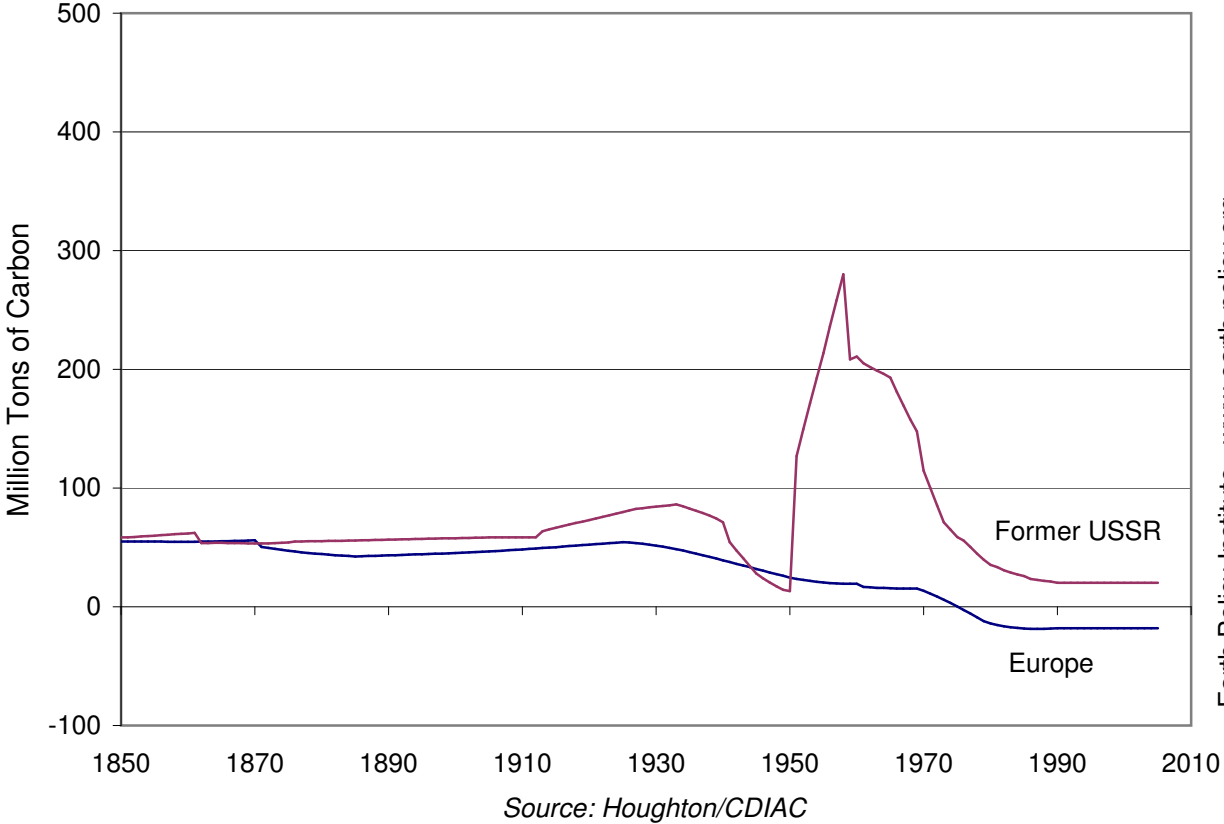
Net Carbon Emissions from Land Use Change in the Americas, 1850-2005



Net Carbon Emissions from Land Use Change in Asia and the Pacific, 1850-2005



Net Carbon Emissions from Land Use Change in Europe and the Former Soviet Union, 1850-2005



Forest in Protected Areas by Region, 2010

Region	Protected Forest Area	
	Million Hectares ¹	Percent of Total Forest Area ²
Africa	83	13.4
Asia	126	23.7
Europe	40	4.0
North and Central America	71	10.2
Oceania	31	16.2
South America	110	17.0
World	460	12.5

Notes:

¹ Note: One hectare = 2.47 acres.

² Information availability is relatively low in Africa (91.8 percent of forest area), Asia (89.3 percent) and South America (74.6 percent).

Source: U.N. Food and Agriculture Organization, *Global Forest Resources Assessment 2010* (Rome: 2010), p. 60.

This is part of a supporting dataset for Lester R. Brown, **World on the Edge: How to Prevent Environmental and Economic Collapse** (New York: W.W. Norton & Company, 2011). For more information and a free download of the book, see Earth Policy Institute on-line at www.earth-policy.org.

Marine Protected Area in Top 15 Countries, 2009

Country	Marine Area Protected	
	Square Kilometers	Percent of Territorial Waters
Australia	264,359	28.3
United States	227,839	24.7
Ecuador	139,557	13.0
Russia	119,742	9.1
Greenland	99,737	36.5
Indonesia	64,325	1.9
Brazil	51,015	20.1
Mexico	49,123	16.7
Canada	33,160	1.2
Italy	25,932	16.7
Japan	21,535	5.6
Philippines	18,922	1.5
Kiribati	15,618	20.2
Venezuela	14,399	15.3
New Zealand	12,802	7.1

Source: Compiled by Earth Policy Institute from U.N. Statistics Division and U.N. Department of Social and Economic Affairs, *Millennium Development Goals Indicators*, electronic database, at mdgs.un.org, updated 23 June 2010.

This is part of a supporting dataset for Lester R. Brown, **World on the Edge: How to Prevent Environmental and Economic Collapse** (New York: W.W. Norton & Company, 2011). For more information and a free download of the book, see Earth Policy Institute on-line at www.earth-policy.org.

Threatened Species in Major Groups of Organisms, 2010

Group	Species Evaluated		Share Threatened*			Total Share Threatened Percent
	Number	Percent of Estimated Described Species	Vulnerable	Endangered Percent	Critical	
Mammals	5,491	100.0	9.0	8.2	3.4	20.6
Birds	10,027	100.0	6.8	3.7	1.9	12.4
Reptiles	2,806	30.5	10.3	7.1	3.8	21.2
Amphibians	6,296	94.8	10.4	12.0	7.7	30.1
Fishes	8,848	27.8	12.1	4.5	4.2	20.9
Insects	3,269	0.3	14.6	5.1	2.7	22.4
Mollusks	3,149	3.7	18.6	10.4	11.8	40.9
Plants	12,914	4.2	36.5	18.6	12.5	67.6

* Note: The IUCN categories for species according to threat of extinction are Least Concern, Near Threatened, Vulnerable, Endangered, Critically Endangered, Extinct in the Wild, and Extinct. Vulnerable species are those that face a high risk of extinction in the wild, Endangered species are those that face a very high risk of extinction in the wild, and Critically Endangered species are those that face an extremely high risk of extinction in the wild. The total share threatened in each group do not mean that the remainder are all categorized as Least Concern; a number of species in many groups are listed as Near Threatened or Data Deficient.

Source: Compiled by Earth Policy Institute from "Numbers of Threatened Species by Major Groups of Organisms (1996-2010)" and "Changes in Numbers of Species in the Threatened Categories (CR, EN, VU) from 1996 to 2010," summary tables for International Union for Conservation of Nature and Natural Resources (IUCN), *IUCN Red List of Threatened Species*, version 2010.4, at www.iucnredlist.org, viewed 15 November 2010; IUCN Species Survival Commission, *IUCN Red List Categories and Criteria: Version 3.1* (Gland, Switzerland: 2000).

This is part of a supporting dataset for Lester R. Brown, **World on the Edge: How to prevent Environmental and Economic Collapse** (New York: W.W. Norton & Company, 2008). For more information and a free download of the book, see Earth Policy Institute on-line at www.earth-policy.org.

Plan B Budget: Additional Annual Funding Needed to Restore the Earth

Activity	Funding
	Billion U.S. Dollars
Planting trees	23
Protecting topsoil on cropland	24
Restoring rangelands	9
Restoring fisheries	13
Stabilizing water tables	10
Protecting biological diversity	31
Total	110

Sources: Compiled by Earth Policy Institute, with planting trees to reduce flooding and conserve soil from Lester R. Brown and Edward C. Wolf, "Reclaiming the Future," in Lester R. Brown et al., *State of the World 1988* (New York: W. W. Norton & Company, 1988), p. 174, using data from U.N. Food and Agriculture Organization (FAO), *Fuelwood Supplies in the Developing Countries*, Forestry Paper 42 (Rome: 1983), plus planting trees to sequester carbon from Intergovernmental Panel on Climate Change, *Climate Change 2007: Mitigation of Climate Change. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge, U.K.: Cambridge University Press, 2007), pp. 543, 559; protecting topsoil based on Lester R. Brown and Edward C. Wolf, "Reclaiming the Future," in Lester R. Brown et al., *State of the World 1988* (New York: W. W. Norton & Company, 1988), p. 174, using data from FAO, *Fuelwood Supplies in the Developing Countries*, Forestry Paper 42 (Rome: 1983); restoring rangelands from United Nations Environment Programme, *Status of Desertification and Implementation of the United Nations Plan of Action to Combat Desertification* (Nairobi: 1991), pp. 73–92, with figures converted from 1990 to 2004 dollars using implicit price deflators from U.S. Department of Commerce, Bureau of Economic Analysis, "Table C.1. GDP and Other Major NIPA Aggregates," in *Survey of Current Business*, September 2005, p. D–48; restoring fisheries from Andrew Balmford et al., "The Worldwide Costs of Marine Protected Areas," *Proceedings of the National Academy of Sciences*, vol. 101, no. 26 (29 June 2004), pp. 9,694–97; stabilizing water tables from author's estimate; protecting biological diversity from World Parks Congress, *Recommendations of the Vth IUCN World Parks Congress* (Durban, South Africa: 2003), pp. 17–19, and World Parks Congress, "The Durban Accord," at www.iucn.org/about/work/programmes/pa/pa_event/wcpa.wpc, viewed 19 October 2007.

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